

Bochang Moon

Assistant Professor

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Education

- **Ph.D.** in Computer Science, KAIST, Korea Feb. 2010 – Aug. 2014
Thesis: Acceleration Techniques for Monte Carlo Ray Tracing
Advisor: Sung-Eui Yoon
- **M.S.** in Computer Science at KAIST, Korea Feb. 2008 – Jan. 2010
Thesis: Cache-Oblivious Ray Reordering
Advisor: Sung-Eui Yoon
- **B.S.** in Computer Science at Chung-Ang university, Korea Mar. 2004 – Feb. 2008
Graduated top of the college of engineering (GPA: 4.35/4.50)

Professional Experience

- **Assistant Professor**, Gwangju Institute of Science and Technology Sep. 2016 - present
- **Post Doc**, Disney Research Zürich (based on Edinburgh) Nov. 2014 – July 2016
- **Post Doc**, Dept. of Computer Science, KAIST Sep. 2014 – Oct. 2014
- **Research Intern**, Adobe, US (mentor: Nathan Carr) Jun. 2011 – Sep. 2011
- **Research Assistant**, Scalable Graphics/Geometric Algorithm Lab., KAIST Feb. 2008 – Aug. 2014
- **Teaching Assistant**, Dept. of Computer Science, KAIST Feb. 2009 – Jan. 2011

Research Interests

- Denoising
- Cache-coherent algorithms for ray tracing
- Sampling and reconstruction for Monte Carlo ray tracing
- Photorealistic rendering for augmented and virtual reality

Awards

- Significant New Researcher Award at Korea Computer Graphics Society 2014
- 3rd place at ACM Student Research Competition (SRC) Grand Finals held at ACM Awards Banquet

1st place at ACM SRC held at ACM SIGGRAPH 2009

RACBVHs: Random-Accessible Compressed Bounding Volume Hierarchies

Tae-Joon Kim, [Bochang Moon](#), Duksu Kim, Sung-Eui Yoon

Publications (Conference / Journal papers)

1. Noise Reduction on G-Buffers for Monte Carlo Filtering

[Bochang Moon](#), Jose A Iglesias-Guitian, Steven McDonagh, Kenny Mitchell

Computer Graphics Forum (Presented at Eurographics Symposium on Rendering 2017), 2017

2. Pixel History Linear Models for Real-Time Temporal Filtering

Jose A Iglesias-Guitian, [Bochang Moon](#), Charalampos Koniaris, Eric Smolikowski, Kenny Mitchell

Computer Graphics Forum (Proceedings of Pacific Graphics 2016), vol. 35, no. 7, pp. 363-372, Oct. 2016

3. Nonlinearly Weighted First-order Regression for Denoising Monte Carlo Renderings

Benedikt Bitterli, Fabrice Rousselle, [Bochang Moon](#), Jose A. Iglesias-Guitian, David Adler, Kenny Mitchell, Wojciech Jarosz, Jan Novak

Computer Graphics Forum (Proceedings of Eurographics Symposium on Rendering 2016), vol. 35, no. 4, July 2016

4. User, Metric, and Computational Evaluation of Foveated Rendering Methods

Nicholas T. Swafford, Charalampos Koniaris, Jose A. Iglesias-Guitian, [Bochang Moon](#), Darren Cosker, Kenny Mitchell

Proceedings of ACM Symposium on Applied Perception, July 2016

5. Adaptive polynomial rendering

[Bochang Moon](#), Steven McDonagh, Kenny Mitchell, Markus Gross

ACM Transactions on Graphics (Proceedings of SIGGRAPH 2016), vol. 35, no. 4, pp. 40:1-40:10, July 2016

6. Adaptive rendering with linear predictions

[Bochang Moon](#), Jose A. Iglesias-Guitian, Sung-Eui Yoon, Kenny Mitchell

ACM Transactions on Graphics (Proceedings of SIGGRAPH 2015), vol. 34, no. 4, pp. 121:1-121:11, Aug. 2015

7. Recent advances in adaptive sampling and reconstruction for Monte Carlo rendering

Matthias Zwicker, Wojciech Jarosz, Jaakko Lehtinen, [Bochang Moon](#), Ravi Ramamoorthi, Fabrice Rousselle, Pradeep Sen, Cyril Soler, Sung-Eui Yoon

Computer Graphics Forum (Proceedings of Eurographics 2015), vol. 34, no. 2, pp. 667-681, May 2015

8. Adaptive rendering based on weighted local regression

[Bochang Moon](#), Nathan Carr, Sung-Eui Yoon

ACM Transactions on Graphics (Presented at SIGGRAPH 2015), vol. 33, no. 5, pp. 170:1-170:14, Aug. 2014

9. P-RPF: pixel-based random parameter filtering for Monte Carlo rendering

Hyosub Park, [Bochang Moon](#), Soomin Kim, Sung-Eui Yoon

Proceedings of Computer-Aided Design and Computer Graphics (CAD/Graphics), pp. 123 - 130, Nov. 2013

10. Robust image denoising using a virtual flash image for Monte Carlo ray tracing

[Bochang Moon](#), Jong Yun Jun, JongHyeob Lee, Kunho Kim, Toshiya Hachisuka, Sung-Eui Yoon

Computer Graphics Forum (Presented at Eurographics Symposium on Rendering 2014), vol. 32, No. 1, pp. 139-151, Feb. 2013

11. Cache-oblivious ray reordering

Bochang Moon, Youngyong Byun, Tae-Joon Kim, Pio Claudio, Hye-sun Kim, Yun-ji Ban, Seung Woo Nam, Sung-Eui Yoon
ACM Transactions on Graphics (Presented at SIGGRAPH 2011), vol. 29, no. 3, pp. 28:1-28:10, June 2010

12. HCCMeshes: hierarchical-culling oriented compact meshes

Tae-Joon Kim, Yongyoung Byun, Yongjin Kim, Bochang Moon, Seungyong Lee, Sung-Eui Yoon
Computer Graphics Forum (Proceedings of Eurographics 2010), vol. 29, no. 2, pp. 299-308, May 2010

13. RACBVHs: random-accessible compressed bounding volume hierarchies

Tae-Joon Kim, Bochang Moon, Duksu Kim, Sung-Eui Yoon
IEEE Transactions on Visualization and Computer Graphics, vol. 16, no. 2, pp. 273-286, Mar. 2010

Presentations (Short Papers/Posters/Exhibitions)

1. Interactive Ray-Traced Area Lighting with Adaptive Polynomial Filtering

Jose A. Iglesias Guitian, Bochang Moon, Kenny Mitchell
The 13th European Conference on Visual Media Production (CVMP), London, 2016

2. IRIDIUM: Immersive Rendered Interactive Deep Media

Babis Koniaris, Maggie Kosek, Ivan Huerta, Karen Darragh, Charles Malleson, Joanna Jamroz, Nick Swafford, Jose A. Iglesias Guitian, Bochang Moon, Ali Israr, Kenny Mitchell
VR Village in SIGGRAPH 2016

Domestic Publications

1. SURE-based-Trous Wavelet Filter for Interactive Monte Carlo Rendering

Soomin Kim, Bochang Moon, Sung-Eui Yoon
Journal of KIISE, vol. 43, no. 8, pp. 835-840, Aug. 2016

Invited Talks

1. Local Regression based Denoising for Ray Tracing

- a. Korea Computer Graphics Society, July 12, 2017
- b. KwangWoon University, Mar. 16, 2017
- c. KAIST, Aug. 16, 2016

Patents

1. Adaptive sampling guided by multilateral filtering

Bochang Moon, Nathan Carr
Registration #: 08824834, US, 02 Sep. 2014

2. Method for removing image noise on basis of stochastic rendering

Sung-Eui Yoon, Bochang Moon, Kunho Kim, Jong Yun Jun, Jong Hyeob Lee
Publication #: WO/2013/137522, PCT, 19 Sep. 2013

3. Noise reduction method for stochastic rendering image

Sung-Eui Yoon, Bochang Moon, Kunho Kim, Jong Yun Jun, Jong Hyeob Lee

Registration #: 1012827000000, Korea, 01 July 2013

Professional Activities

- Associate Editor
 - Visual Computer, Sep. 2016 - present
- Program Committee
 - EGSR 2017, KCGS 2017
- Reviewer
 - ACM SIGGRAPH, ACM SIGGRAPH ASIA, ACM Transactions on Graphics, IEEE TVCG, Pacific Graphics, Visual Computer, ACM TOPLAS, ETC.

Press Release

- “Disney Research rendering method preserves detail in film quality production graphics”
 - Phys, Aug. 5, 2015, <http://phys.org/news/2015-08-team-method-quality-production-graphics.html>
- “Adaptive rendering method reduces discolored pixels in photo-realistic images”
 - Phys, July 20, 2016, <https://phys.org/news/2016-07-method-discolored-pixels-photo-realistic-images.html>

Research Grants

1. Developed intelligent UXUI technology for AR glasses-based docent operation
 - 2017.04-2017.12.31, MCST, 30M won (\$30K)
2. 3D Indoor Reconstruction and Its Applications
 - 2017.05-2017.12, PI, GIST, approximately 60M won (\$60K)
3. Denoising for Physically based Rendering
 - 2017.03 – 2019.02, PI, NRF, 225M won (\$225K)
4. Denoising Techniques for Monte Carlo Ray Tracing
 - 2016.09 – 2016.12, PI, GIST, 19M won (\$19K)
5. Optimization Techniques for Photorealistic Rendering
 - 2016.09 – 2018.08, PI, GIST seed grant, 70M won (\$70K)
6. Startup funding
 - 2016.09 – 2017.12, PI, GIST seed grant, 130M won (\$130K)

Teaching

1. Introduction to Computer Graphics
 - Spring 2017

Supervised Students

- Ph.D
- MS course
 - Saerom Ha (하세롬, 2017.03 – present)
- Intern
 - Sunhwa Kim (김선화, 2017.02), Jae-Yee Kim (김재이, 2017.07-2017.08)

Dissertation Committee for MS and Ph.D Students

- **MS committee**
 - Yonghoon Kwon (권용훈, advisor: Kuk-Jin Koon, 2017.06), Yunjeong Choi (최윤정, advisor: Jeha Ryu, 2016.12), Jae-Won Ye (예재원, advisor: Kuk-Jin Yoon, 2016.12)